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In the Claims:

Please amend claims 35, 39 and 40 as follows:

1. (Original) A method of controlling cancer suppression in a mammal having a cancer suppressing gene, comprising the steps of:
making a substantially duplicated genetic material corresponding to the genetic material of said gene, the substantially duplicated material selected from the group consisting of a cloned cancer suppressing gene, a modified or defective cancer suppressing gene, homologues thereof, fragments thereof, and mixtures thereof; and
interchanging said duplicated genetic material and the cancer suppressing gene of the mammal.
2. (Original) A method of claim 1, wherein before said making a substantially duplicated genetic material, determining the chromosomal location of said cancer suppressing gene of the mammal.
3. (Original) A method of claim 1, wherein after said making a substantially duplicated genetic material, detecting the presence or absence of an inactive cancer suppressing gene of a tissue sample of the mammal to determine whether or not the tissue sample cancer suppressing gene is defective or absent.
4. (Original) A method of claim 3, wherein in response to a determination that the tissue sample cancer suppressing gene is either defective or absent, replacing a cancer suppressing gene of the mammal with its clone.

5. (Original) A method of claim 3, wherein the determination of whether or not the tissue sample cancer suppressing gene is defective or absent is accomplished by measuring the amount of protein product of said cancer suppressing gene, of the tissue sample, bound by an antibody specific for said protein.

6. (Original) A method of claim 5, wherein the determination of whether or not the tissue sample cancer suppressing gene is defective or absent is accomplished by:

- (a) labeling said tissue sample with radioactive isotope;
- (b) lysing the labeled tissue;
- (c) reacting the protein product of said cancer suppressing gene with an antibody specific for said protein thereby forming a protein/antibody immunocomplex;
- (d) autoradiographing the immunocomplex obtained in step (c); and
- (e) determining the presence or absence of the protein product by comparing the autoradiogram of step (d) with the autoradiogram of the standard protein product.

7. (Original) The method of claim 5, wherein the determination of whether or not the tissue sample cancer suppressing gene is defective or absent is accomplished by enzyme immunoassay techniques.

8. (Original) The method of claim 5, wherein the determination of whether or not the tissue sample cancer suppressing gene is defective or absent is accomplished by immunocytochemistry methods.

9. (Original) The method of claim 5, wherein the cancer suppressing gene is the RB gene and the protein product is ppRB¹¹⁰.

10. (Original) The method of claim 1, wherein said cancer suppressing gene is replaced with substantially duplicated material selected from the group consisting of said cloned cancer suppressing gene, homologues thereof, fragments thereof, and mixtures thereof, for therapeutic purposes.

11. (Original) The method of claim 1, wherein said cancer suppressing gene is replaced with substantially duplicated material selected from the group consisting of said defective cancer suppressing gene, homologues thereof, fragments thereof, and mixtures thereof, for facilitating the testing of the carcinogenicity of environmental influences.

12. (Original) The method of claim 2, wherein the location of said cancer suppressing gene is determined by chromosome walking.

13. (Original) The method of claim 2, wherein the location of said cancer suppressing gene is determined through organic markers.

14. (Original) A method of claim 2, wherein:
said chromosomal location of said cancer suppressing gene is determined by testing genes of a chromosome for phenotypic expression;
determining one of the genes of said chromosome to be a marker gene; and
using chromosomal walking techniques to locate a cancer suppressing gene.

15. (Original) An animal genetically altered so as to have the allele of at least one cancer suppressing gene selected from the group consisting of a defective allele, a homologue thereof, a fragment thereof, and a mixture thereof.

16. (Original) An animal of claim 15, wherein said defective allele is selected from the group consisting of defective alleles of RB genes, breast cancer suppressing genes, Wilm's tumor suppressing genes, Beckwith-Wiedemann syndrome suppressing genes, bladder transitional cell carcinoma suppressing genes, neuroblastoma suppressing genes, small cell lung carcinoma suppressing genes, renal cell carcinoma suppressing genes, acoustic neuroma suppressing genes, colorectal carcinoma suppressing genes, homologues thereof, fragments thereof, and mixtures thereof.

17. (Original) An animal of claim 15, wherein said allele contains a DNA fragment having at least one defective nucleotide sequence.

18. (Original) An animal of claim 15, wherein said defective allele contains a DNA fragment having at least one defective RB nucleotide sequence.

19. (Original) The animal of claim 15, wherein said animal is a mouse.

20. (Original) A method for determining the carcinogenicity of suspected environmental influences, using the animal of claim 14, comprising the steps of:
exposing said animal to a suspected environmental influence;
observing the animal for the phenotypic expression of cancer; and
determining carcinogenicity of the suspected environmental influence in response to observing a phenotypic expression of cancer in the animal.

21. (Original) A method of claim 20, wherein said exposing includes exposing to a source of radiation.

22. (Original) A method of claim 20, wherein said exposing includes exposing to tobacco combustion products.

23. (Original) A method of claim 20, wherein said exposing includes exposing to food additives.

24. (Original) A method of claim 20, wherein said exposing includes exposing to artificial substances.

25. (Original) A method of claim 20, wherein said observing includes examining the animal for tumor development.

26. (Original) A method of claim 25, wherein in response to the formation of a tumor in the animal, analyzing the tumor for the presence of cancer cells.

27. (Original) A method of making the animal of claim 15, comprising:
using at least one allele of an animal cancer suppressing gene selected from the group consisting of a defective allele, a homologue thereof, a fragment thereof, and a mixture thereof;

mutating at least one animal cell with said allele to form a mutated cell;
introducing said mutated cell into an animal blastocyst;
permitting growth of the blastocyst for a given period of time sufficient to incorporate said allele into its cells; repressing genetic recombinations within said cells;
transferring the blastocyst containing said allele into the uterus of a pseudo pregnant animal for giving birth subsequently to an animal bearing said allele;
breeding said animal to reproduce additional animals; and
selecting the animal of claim 14 from said additional animals by determining the presence therein of the said allele.

28. (Original) A method of claim 27, wherein before introducing said allele, removing said blastocyst from a super ovulated animal, and wherein said blastocyst is comprised of undifferentiated cells.

29. (Original) A method of claim 27, wherein said introducing is performed in vitro.

30. (Original) A pharmaceutical composition wherein the active ingredient is selected from the group consisting of a naturally occurring intact cancer suppressing gene, a cloned intact cancer suppressing gene, fragments thereof, homologues thereof and mixtures thereof.

31. (Original) A pharmaceutical composition of claim 30, wherein said naturally occurring and cloned cancer suppressing gene is selected from the group consisting of RB genes, breast cancer suppressing genes, Wilm's tumor suppressing genes, Beckwith-Wiedemann syndrome suppressing genes, bladder transitional cell carcinoma suppressing genes, neuroblastoma suppressing genes, small cell lung carcinoma suppressing genes, renal cell carcinoma suppressing genes, acoustic neuroma suppressing genes, colorectal carcinoma suppressing genes, homologues thereof, fragments thereof, and mixtures thereof.

32. (Original) A pharmaceutical composition of claim 30, wherein the active ingredient is selected from the group consisting of RB cDNA, modified RB cDNA fragment, clones thereof, homologues thereof and mixtures thereof.

33. (Original) A pharmaceutical composition of claim 31, wherein the active ingredient for each of said gene is selected from the group consisting of cDNA of said gene, fragments of said cDNA, homologues thereof and mixtures thereof.

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34. (Original) A pharmaceutical composition of claim 32, wherein the cancer suppressing gene is isolated from human chromosome 13 region 13q14.

35. (Currently amended) A pharmaceutical composition of claim 31, wherein the cancer suppressing gene and its clone each has the following nucleotide sequence comprising SEQ ID NO:1:

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TTCGGTTTT TCTCAGGGA CGTTGAAATT ATTTTGTAA CGGCAGTCCG GAGAGGACCG 60
GGCGTGGCCC GCGTGGGCG CCGTCGTCTT CCGGGGCGCT CCTCCACAGC TCGCTGGCTC 120
CGCGCGCGGA AAGGCGTC ATG CCG CCC AAA ACC CCC CGA AAA ACG GCG GCC 171
Met Pro Pro Lys Thr Pro Arg Lys Thr Ala Ala
1 5 10
ACC GCG GCG GCT GCG GCG GCG GAA CCC CCG CCA CCG CCG CCG CCG CCC 219
Thr Ala Ala Ala Ala Ala Ala Glu Pro Pro Ala Pro Pro Pro Pro Pro
15 20 25
CCT CCG TAG GAG GAC CCA GAG CAG GAC AGC GGC CCG GAG GAC CTG CCT 267
Pro Pro Glu Glu Asp Pro Glu Gln Asp Ser Gly Pro Glu Asp Leu Pro
30 35 40
CTC CTC AGG CTT GAG TTT GAA GAA ACA GAA GAA CCT GAT TTT ACT GCA 315
Leu Val Arg Leu Glu Phe Glu Glu Thr Glu Glu Pro Asp Phe Thr Ala
45 50 55
TTA TGT CAG AAA TTA AAG ATA CCA GAT CAT GTC AGA GAG AGA GCT TGG 363
Leu Cys Gln Lys Leu Lys Ile Pro Asp His Val Arg Glu Arg Ala Trp
60 65 70 75
TTA ACT TGG GAG AAA GTT TCA TCT GTG GAT GGA GTA TTG CCA GCT TAT 411
Leu Thr Trp Glu Lys Val Ser Ser Val Asp Gly Val Leu Gly Gly Tyr
80 85 90
ATT CAA AAG AAA AAG GAA CTG TCG GGA ATC TGT ATC TTT ATT GCA GCA 459
Ile Gln Lys Lys Lys Glu Leu Trp Gly Ile Cys Ile Phe Ile Ala Ala
95 100 105
GTT GAC CTA GAT GAG ATG TCG TTC ACT TTT ACT GAG CTA CAG AAA AAC 507
Val Asp Leu Asp Glu Met Ser Phe Thr Phe Thr Glu Leu Gln Lys Asn
110 115 120
ATA GAA ATC AGT CTC CAT AAA TTC TTT AAC TTA CTA AAA GAA ATT GAT 555
Ile Glu Ile Ser Val His Lys Phe Phe Asn Leu Leu Lys Glu Ile Asp
125 130 135

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~~ACC AGT ACC AAA GTT GAT AAT GCT ATG TCA ACA CTC TTG AAG AAG TAT~~ 603
~~Thr Ser Thr Lys Val Asp Asn Ala Met Ser Arg Leu Leu Lys Lys Tyr~~
~~140 145 150 155~~

~~GAT GTA TTG TTT GCA CTC TTC AGC AAA TTG GAA AGG ACA TGT CAA CTT~~ 651
~~Asp Val Leu Phe Ala Leu Phe Ser Lys Leu Glu Arg Thr Cys Glu Leu~~
~~160 165 170~~

~~ATA TAT TTG ACA CAA CCC AGC AGT TCG ATA TCT ACT GAA ATA AAT TCT~~ 699
~~Ile Tyr Leu Thr Gln Pro Ser Ser Ser Ile Ser Thr Glu Ile Asn Ser~~
~~175 180 185~~

~~GCA TTG GTG CTA AAA GTT TCT TGG ATC ACA TTT TTA TTA GCT AAA GGG~~ 747
~~Ala Leu Val Leu Lys Val Ser Trp Ile Thr Phe Leu Leu Ala Lys Gly~~
~~190 195 200~~

~~GAA GTA TTA CAA ATG GAA GAT GAT CTC GTG ATT TCA TTT CAG TTA ATG~~ 795
~~Glu Val Leu Gln Met Glu Asp Asp Leu Val Ile Ser Phe Gln Leu Met~~
~~205 210 215~~

~~CTA TGT GTC CTT GAC TAT TTT ATT AAA CTC TCA CCT CCC ATG TTG CTC~~ 843
~~Leu Cys Val Leu Asp Tyr Phe Ile Lys Leu Ser Pro Pro Met Leu Leu~~
~~220 225 230 235~~

~~AAA GAA CCA TAT AAA ACA GCT GTT ATA CCC ATT AAT GGT TCA CCT CGA~~ 891
~~Lys Glu Pro Tyr Lys Thr Ala Val Ile Pro Ile Asn Gly Ser Pro Arg~~
~~240 245 250~~

~~ACA CCC AGC CGA CGT CAG AAC AGG AGT GCA CGG ATA GCA AAA CAA CTA~~ 939
~~Thr Pro Arg Arg Gly Gln Asn Arg Ser Ala Arg Ile Ala Lys Gln Leu~~
~~255 260 265~~

~~GAA AAT GAT ACA ACA ATT ATT GAA GTT CTC TGT AAA GAA CAT GAA TGT~~ 987
~~Glu Asn Asp Thr Arg Ile Ile Glu Val Leu Cys Lys Glu His Glu Cys~~
~~270 275 280~~

~~AAT ATA GAT GAG GTG AAA AAT GTT TAT TTC AAA AAT TTT ATA CCT TTT~~ 1035
~~Asn Ile Asp Glu Val Lys Asn Val Tyr Phe Lys Asn Phe Ile Pro Phe~~
~~285 290 295~~

~~ATG AAT TCT CTT GCA CTT GTA ACA TCT AAT GCA CTT CCA GAG GTT GAA~~ 1083
~~Met Asn Ser Leu Gly Leu Val Thr Ser Asn Gly Leu Pro Glu Val Glu~~
~~300 305 310 315~~

~~AAT CTT TCT AAA CGA TAC GAA GAA ATT TAT CTT AAA AAT AAA GAT CTA~~ 1131
~~Asn Leu Ser Lys Arg Tyr Glu Glu Ile Tyr Leu Lys Asn Lys Asp Leu~~
~~320 325 330~~

~~GAT GCA ACA TTA TTT TTG GAT CAT GAT AAA ACT CTT CAG ACT GAT TCT~~ 1179
~~Asp Ala Arg Leu Phe Leu Asp His Asp Lys Thr Leu Gln Thr Asp Ser~~
~~335 340 345~~

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~~ATA CAC AGT TTT GAA ACA CAG AGA ACA CCA CGA AAA AGT AAC CTT GAT~~ 1227
~~Ile Asp Ser Phe Glu Thr Gln Arg Thr Pro Arg Lys Ser Asn Leu Asp~~
~~350 355 360~~

~~GAA CAG CTC AAT GTA ATT CCT CCA CAC ACT CCA GTT AGG ACT GTT ATG~~ 1275
~~Glu Glu Val Asn Val Ile Pro Pro His Thr Pro Val Arg Thr Val Met~~
~~365 370 375~~

~~AAC ACT ATC CAA CAA TTA ATG ATG ATT TTA AAT TCA CCA AGT GAT CAA~~ 1323
~~Asn Thr Ile Gln Gln Leu Met Met Ile Leu Asn Ser Ala Ser Asp Gln~~
~~380 385 390 395~~

~~CCT TCA GAA AAT CTC ATT TCC TAT TTT AAC AAC TGC ACA GTG AAT CCA~~ 1371
~~Pro Ser Glu Asn Leu Ile Ser Tyr Phe Asn Asn Cys Thr Val Asn Pro~~
~~400 405 410~~

~~AAA GAA AGT ATA CTG AAA AGA CTC AAG GAT ATA GGA TAC ATC TTT AAA~~ 1419
~~Lys Glu Ser Ile Leu Lys Arg Val Lys Asp Ile Gly Tyr Ile Phe Lys~~
~~415 420 425~~

~~GAG AAA TTT GCT AAA GCT GTG CGA CAG GGT TGT CTC GAA ATT GCA TCA~~ 1467
~~Glu Lys Phe Ala Lys Ala Val Gly Gln Gly Cys Val Glu Ile Gly Ser~~
~~430 435 440~~

~~CAG CGA TAC AAA CTT GCA GTT CGC TTG TAT TAC CGA GTA ATG GAA TCC~~ 1515
~~Gln Arg Tyr Lys Leu Gly Val Arg Leu Tyr Tyr Arg Val Met Glu Ser~~
~~445 450 455~~

~~ATC CTT AAA TCA GAA GAA GAA CGA TTA TCC ATT CAA AAT TTT AGC AAA~~ 1563
~~Met Leu Lys Ser Glu Glu Glu Arg Leu Ser Ile Gln Asn Phe Ser Lys~~
~~460 465 470 475~~

~~CTT CTG AAT CAC AAC ATT TTT CAT ATG TCT TTA TTG GCG TGC GCT CTT~~ 1611
~~Leu Leu Asn Asp Asn Ile Phe His Met Ser Leu Leu Ala Cys Ala Leu~~
~~480 485 490~~

~~GAG CTT GTA ATG GCC ACA TAT AGC AGA AGT ACA TCT CAG AAT CTT GAT~~ 1659
~~Glu Val Val Met Ala Thr Tyr Ser Arg Ser Thr Ser Gln Asn Leu Asp~~
~~495 500 505~~

~~TCT CGA ACA GAT TTG TCT TTC CCA TGG ATT CTG AAT GTG CTT AAT TTA~~ 1707
~~Ser Gly Thr Asp Leu Ser Phe Pro Trp Ile Leu Asn Val Leu Asn Leu~~
~~510 515 520~~

~~AAA GCC TTT GAT TTT TAC AAA GTG ATC GAA AGT TTT ATC AAA GCA CAA~~ 1755
~~Lys Ala Phe Asp Phe Tyr Lys Val Ile Glu Ser Phe Ile Lys Ala Glu~~
~~525 530 535~~

~~GGC AAC TTG ACA AGA GAA ATG ATA AAA CAT TTA GAA CGA TGT GAA CAT~~ 1803
~~Gly Asn Leu Thr Arg Glu Met Ile Lys His Leu Glu Arg Cys Glu His~~
~~540 545 550 555~~

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~~CGA ATC ATG GAA TCC CTT GCA TGG CTC TCA GAT TCA CCT TTA TTT GAT~~ 1851
~~Arg Ile Met Glu Ser Leu Ala Trp Leu Ser Asp Ser Pro Leu Phe Asp~~
 560 565 570

~~CTT ATT AAA CAA TCA AAG GAC CGA GAA GGA CCA ACT GAT CAC CTT GAA~~ 1899
~~Leu Ile Lys Gln Ser Lys Asp Arg Glu Gly Pro Thr Asp His Leu Glu~~
 575 580 585

~~TCT CCT TGT CCT CTT AAT CTT CCT CTC CAG AAT AAT CAC ACT GCA GCA~~ 1947
~~Ser Ala Cys Pro Leu Asn Leu Pro Leu Gln Asn Asn His Thr Ala Ala~~
 590 595 600

~~GAT ATG TAT CTT TCT CCT GTA AGA TCT CCA AAG AAA AAA CGT TCA ACT~~ 1995
~~Asp Met Tyr Leu Ser Pro Val Arg Ser Pro Lys Lys Lys Gly Ser Thr~~
 605 610 615

~~ACG CGT GTA AAT TCT ACT GCA AAT GCA GAG ACA CAA GCA ACC TCA GCC~~ 2043
~~Thr Arg Val Asn Ser Thr Ala Asn Ala Glu Thr Gln Ala Thr Ser Ala~~
 620 625 630 635

~~TTC CAG ACC CAG AAG CCA TTG AAA TCT ACC TCT CTT TCA CTC TTT TAT~~ 2091
~~Phe Gln Thr Gln Lys Pro Leu Lys Ser Thr Ser Leu Ser Leu Phe Tyr~~
 640 645 650

~~AAA AAA CTG TAT CGG CTA GCC TAT CTC CGG CTA AAT ACA CTT TGT GAA~~ 2139
~~Lys Lys Val Tyr Arg Leu Ala Tyr Leu Arg Leu Asn Thr Leu Cys Glu~~
 655 660 665

~~CGC CTT CTC TCT GAG CAC CCA GAA TTA GAA CAT ATC ATC TGG ACC CTT~~ 2187
~~Arg Leu Leu Ser Glu His Pro Glu Leu Glu His Ile Ile Trp Thr Leu~~
 670 675 680

~~TTC CAG CAC ACC CTG CAG AAT GAG TAT GAA CTC ATG AGA GAC AGG CAT~~ 2235
~~Phe Gln His Thr Leu Gln Asn Glu Tyr Glu Leu Met Arg Asp Arg His~~
 685 690 695

~~TTG GAC CAA ATT ATG ATG TCT TCC ATG TAT GGC ATA TGC AAA GTG AAG~~ 2283
~~Leu Asp Gln Ile Met Met Cys Ser Met Tyr Gly Ile Cys Lys Val Lys~~
 700 705 710 715

~~AAT ATA GAC CTT AAA TTC AAA ATC ATT GTA ACA GCA TAC AAG GAT CTT~~ 2331
~~Asn Ile Asp Leu Lys Phe Lys Ile Ile Val Thr Ala Tyr Lys Asp Leu~~
 720 725 730

~~CCT CAT GCT GTT CAG GAG ACA TTC AAA CCT GTT TTC ATC AAA GAA GAG~~ 2379
~~Pro His Ala Val Gln Glu Thr Phe Lys Arg Val Leu Ile Lys Glu Glu~~
 735 740 745

~~GAG TAT GAT TCT ATT ATA GTA TTC TAT AAC TCG GTC TTC ATG CAG AGA~~ 2427
~~Glu Tyr Asp Ser Ile Ile Val Phe Tyr Asn Ser Val Phe Met Gln Arg~~
 750 755 760

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~~CTG AAA ACA AAT ATT TTG CAG TAT CCT TCC ACC AGG CCC CCT ACC TTG~~ 2475
~~Leu Lys Thr Asn Ile Leu Gln Tyr Ala Ser Thr Arg Pro Pro Thr Leu~~
~~765 770 775~~

~~TCA CCA ATA CCT CAC ATT CCT CGA AGC CCT TAC AAG TTT CCT AGT TCA~~ 2523
~~Ser Pro Ile Pro His Ile Pro Arg Ser Pro Tyr Lys Phe Pro Ser Ser~~
~~780 785 790 795~~

~~CCC TTA CGG ATT CCT GGA GGG AAC ATC TAT ATT TCA CCC CTG AAG AGT~~ 2571
~~Pro Leu Arg Ile Pro Gly Gly Asn Ile Tyr Ile Ser Pro Leu Lys Ser~~
~~800 805 810~~

~~CCA TAT AAA ATT TCA GAA GGT CTG CCA ACA CCA ACA AAA ATG ACT CCA~~ 2619
~~Pro Tyr Lys Ile Ser Glu Gly Leu Pro Thr Pro Thr Lys Met Thr Pro~~
~~815 820 825~~

~~AGA TCA AGA ATC TTA GTA TCA ATT GGT GAA TCA TTC GGG ACT TCT CAG~~ 2667
~~Arg Ser Arg Ile Leu Val Ser Ile Gly Glu Ser Phe Gly Thr Ser Glu~~
~~830 835 840~~

~~AAG TTC CAG AAA ATA AAT CAG ATG GTA TGT AAC AGC GAC CGT GTG CTC~~ 2715
~~Lys Phe Gln Lys Ile Asn Gln Met Val Cys Asn Ser Asp Arg Val Leu~~
~~845 850 855~~

~~AAA ACA AGT GCT GAA GGA AGC AAC CCT CCT AAA CCA CTG AAA AAA CTA~~ 2763
~~Lys Arg Ser Ala Glu Gly Ser Asn Pro Pro Lys Pro Leu Lys Lys Leu~~
~~860 865 870 875~~

~~CGC TTT GAT ATT GAA GCA TCA GAT GAA GCA GAT GCA AGT AAA CAT CTC~~ 2811
~~Arg Phe Asp Ile Glu Gly Ser Asp Glu Ala Asp Gly Ser Lys His Leu~~
~~880 885 890~~

~~CCA GGA GAG TCC AAA TTT CAG CAG AAA CTG CCA GAA ATG ACT TCT ACT~~ 2859
~~Pro Gly Glu Ser Lys Phe Gln Gln Lys Leu Ala Glu Met Thr Ser Thr~~
~~895 900 905~~

~~CGA ACA CGA ATG CAA AAG CAG AAA ATG AAT GAT ACC ATG GAT ACC TCA~~ 2907
~~Arg Thr Arg Met Gln Lys Gln Lys Met Asn Asp Ser Met Asp Thr Ser~~
~~910 915 920~~

~~AAC AAG GAA GAG AAA TCAGGATCTC AGGACCTTGG TGGACACTGT GTACACCTCT~~ 2962
~~Asn Lys Glu Glu Lys~~
~~925~~

~~GGATTCATTG TCTCTCACAG ATGTGACTGT AT~~ 2994

36. (Original) A pharmaceutical composition of claim 32, wherein said RB cDNA fragment is selected from the group consisting of RB-1, RB-2, RB-5, γ 79R8 and mixtures thereof.

37. (Original) A pharmaceutical composition of claim 32, wherein a resulting mRNA transcript of said RB cDNA fragment has 4.6 kb.

38. (Original) A pharmaceutical composition of claim 37, wherein the cloned genomic DNA has at least 27 exons.

39. (Currently amended) A pharmaceutical composition of claim 30, wherein the cloned RB cDNA transcribes into mRNA which translates in protein having an amino acid sequence comprising SEQ ID NO:2:

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MPPKTPRKTAATAAAAAAEPPAPPPPPPEEDPE ( 34)
QDSCPEDLPLVRLEFEETEEDFTALCQKLKIPDHVRERA ( 74)
WLTWEKVSSVDGVLGGYIQKKKELWGICIFIAAVDLDEM (114)
FTFTELQKNIEISVHKFFNLLKEIDTSTKVDNAMSRLKK (154)
YDVLFALEFSKLERTECELIYLTQPSSSISTEINSALVLKVS (194)
WITFLLAKGEVLQMEDDLVISFQLNLCVLDYFIKLSPPML (234)
LKEPYKTAVIPINGSRTPRRCQMRSAIAKQLENDTRII (274)
EVLCKEHECNIDEVKNVYFKNFIPFMNSLGLVTSNGLPEV (314)
ENLSKRYEEIYLKNKDLDAFLFDHDKTLQTDSIDSFETQ (354)
RTPRKSNLDEEVNVIPPHTPVRTVMNTIQQLMMILNSASD (394)
QPSENLSYFNNCTVNPKESILKRVKDICYIFKEKFAKAV (434)
GQGCVEIGSQRYKLGVRLYYRVMESMLKSEEEERLSIQNFS (474)
KLLNDNIFHMSLLACALEVVMATYSRSTSQNLDSCTDLSF (514)
PWILNVNLKAFDFYKVIESFIKAECNLTREMIKHLEACE (554)
HRIMESLAWLSDSPLFDLIKQSKDREGPTDHLESACPLNL (594)
PLQNNHTAADMYLSPVRSPPKKKGSTTRVNSTANAETQATS (634)
AFQTQKPLKSTSLSLFYKKVYRLAYLRLNTLCERLLSEHP (674)
ELEHIIWTLFQHTLQNEYELMRDRHLDQIMMCSMYGICKV (714)
KNIDLKFKIIVTAYKDLPHAVQETFKRVLIKEEEYDSIIV (754)
FYNSVFMQRLKTNILQYASTRPPTLSPIPHIPRSPYKFPS (794)
SPLRIPCGNIYISPLKSPYKISEGLPTPTKMTPRSRIILVS (834)
ICESFGTSEKFKQKINQMVCNSDRVLKRSAEGSNPPKPLKK (874)
LRFDIEGSDEADGSKHLPGESKFQOKLAEMTSTRTRMQKQ (914)
KMNDSDMDTSNKEEK (928)

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single letter abbreviations for the amino acid residues are:
 A, Ala; C, Cys; D, Asp; E, Glu; F, Phe; G, Gly; H, His;

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~~I, Ile; K, Lys; L, Leu; M, Met; N, Asn; P, Pro; Q, Gln;
R, Arg; S, Ser; T, Thr; V, Val; W, Trp; and Y, Tyr.~~

40. (Currently amended) A DNA nucleotide sequence comprising SEQ

ID NO:1.:

```

TTCGGGTTTT TCTCAGGGGA CGTTCAAATT ATTTTGTAA CGGGAGTCCG GAGAGGACCG      60
GGCGTGGCCC GCGTGGGGCG GCGTCGTCCT CCCCCGGGCT CCTCCACAGC TCGCTGGCTC      120
CCGCGCGCGA AAGCGGTC ATG CCG CCC AAA ACC CCC CCA AAA ACG CCC GCC      171
                Met Pro Pro Lys Thr Pro Arg Lys Thr Ala Ala
                1             5             10

ACC GCC GCC GCT GCC GCC GCG GAA CCC CCG CCA CCG CCG CCG CCG CCC      219
Thr Ala Ala Ala Ala Ala Ala Glu Pro Pro Ala Pro Pro Pro Pro Pro
                15             20             25

CCT CCG TAG GAG GAC CCA GAG CAG GAC AGC GCG CCG GAG GAC CTG CCT      267
Pro Pro Glu Glu Asp Pro Glu Gln Asp Ser Gly Pro Glu Asp Leu Pro
                30             35             40

CTC GTC AGG CTT GAG TTT GAA GAA ACA GAA GAA CCT GAT TTT ACT GCA      315
Leu Val Arg Leu Glu Phe Glu Glu Thr Glu Glu Pro Asp Phe Thr Ala
                45             50             55

TTA TGT CAG AAA TTA AAG ATA CCA CAT CAT GTC AGA GAG AGA CCT TGC      363
Leu Cys Gln Lys Leu Lys Ile Pro Asp His Val Arg Glu Arg Ala Trp
                60             65             70             75

TTA ACT TGC GAG AAA GTT TCA TCT CTG GAT GCA GTA TTG CCA CGT TAT      411
Leu Thr Trp Glu Lys Val Ser Ser Val Asp Gly Val Leu Gly Gly Tyr
                80             85             90

ATT CAA AAG AAA AAG GAA CTG TGG CCA ATC TGT ATC TTT ATT GCA GCA      459
Ile Gln Lys Lys Lys Glu Leu Trp Gly Ile Cys Ile Phe Ile Ala Ala
                95             100             105

CTT GAC CTA GAT GAG ATG TCG TTC ACT TTT ACT GAG CTA CAG AAA AAC      507
Val Asp Leu Asp Glu Met Ser Phe Thr Phe Thr Glu Leu Gln Lys Asn
                110             115             120

ATA GAA ATC ACT GTC CAT AAA TTC TTT AAC TTA CTA AAA GAA ATT GAT      555
Ile Glu Ile Ser Val His Lys Phe Phe Asn Leu Leu Lys Glu Ile Asp
                125             130             135

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ACC AGT ACC AAA GTT GAT AAT GCT ATG TCA AGA CTG TTG AAG AAG TAT 603
 Thr Ser Thr Lys Val Asp Asn Ala Met Ser Arg Leu Leu Lys Lys Tyr
 140 145 150 155

GAT GTA TTG TTT GCA CTC TTC AGC AAA TTG GAA AGG ACA TGT CAA CTT 651
 Asp Val Leu Phe Ala Leu Phe Ser Lys Leu Glu Arg Thr Cys Glu Leu
 160 165 170

ATA TAT TTG ACA CAA CCC AGC AGT TCG ATA TCT ACT GAA ATA AAT TCT 699
 Ile Tyr Leu Thr Gln Pro Ser Ser Ser Ile Ser Thr Glu Ile Asn Ser
 175 180 185

GCA TTG CTC CTA AAA GTT TCT TGG ATC ACA TTT TTA TTA CCT AAA GGG 747
 Ala Leu Val Leu Lys Val Ser Trp Ile Thr Phe Leu Leu Ala Lys Gly
 190 195 200

GAA GTA TTA CAA ATG CAA GAT GAT CTC CTG ATT TCA TTT CAG TTA ATG 795
 Glu Val Leu Gln Met Glu Asp Asp Leu Val Ile Ser Phe Gln Leu Met
 205 210 215

CTA TGT CTC CTT GAC TAT TTT ATT AAA CTC TCA CCT CCC ATG TTG CTC 843
 Leu Cys Val Leu Asp Tyr Phe Ile Lys Leu Ser Pro Pro Met Leu Leu
 220 225 230 235

AAA GAA CCA TAT AAA ACA GCT GTT ATA CCC ATT AAT GGT TCA CCT CGA 891
 Lys Glu Pro Tyr Lys Thr Ala Val Ile Pro Ile Asn Gly Ser Pro Arg
 240 245 250

ACA CCC AGG CCA CGT CAG AAC AGG AGT GCA CCG ATA GCA AAA CAA CTA 939
 Thr Pro Arg Arg Gly Gln Asn Arg Ser Ala Arg Ile Ala Lys Gln Leu
 255 260 265

GAA AAT GAT ACA ACA ATT ATT GAA GTT CTC TGT AAA GAA CAT GAA TGT 987
 Glu Asn Asp Thr Arg Ile Ile Glu Val Leu Cys Lys Glu His Glu Cys
 270 275 280

AAT ATA GAT CAG CTG AAA AAT GTT TAT TTC AAA AAT TTT ATA CCT TTT 1035
 Asn Ile Asp Glu Val Lys Asn Val Tyr Phe Lys Asn Phe Ile Pro Phe
 285 290 295

ATG AAT TCT CTT GCA CTT GTA ACA TCT AAT GGA CTT CCA GAG GTT GAA 1083
 Met Asn Ser Leu Gly Leu Val Thr Ser Asn Gly Leu Pro Glu Val Glu
 300 305 310 315

AAT CTT TCT AAA CGA TAC GAA GAA ATT TAT CTT AAA AAT AAA GAT CTA 1131
 Asn Leu Ser Lys Arg Tyr Glu Glu Ile Tyr Leu Lys Asn Lys Asp Leu
 320 325 330

GAT GCA AGA TTA TTT TTG GAT CAT GAT AAA ACT CTT CAG ACT CAT TCT 1179
 Asp Ala Arg Leu Phe Leu Asp His Asp Lys Thr Leu Gln Thr Asp Ser
 335 340 345

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~~ATA GAC AGT TTT GAA ACA CAG ACA ACA CCA CGA AAA ACT AAC CTT GAT~~ 1227
~~Ile Asp Ser Phe Glu Thr Gln Arg Thr Pro Arg Lys Ser Asn Leu Asp~~
~~350 355 360~~

~~GAA GAG GTG AAT GTA ATT CCT CCA CAC ACT CCA GTT AGG ACT GTT ATG~~ 1275
~~Glu Glu Val Asn Val Ile Pro Pro His Thr Pro Val Arg Thr Val Met~~
~~365 370 375~~

~~AAC ACT ATC CAA CAA TTA ATG ATG ATT TTA AAT TCA GCA AGT GAT CAA~~ 1323
~~Asn Thr Ile Gln Gln Leu Met Met Ile Leu Asn Ser Ala Ser Asp Gln~~
~~380 385 390 395~~

~~CCT TCA GAA AAT CTG ATT TCC TAT TTT AAC AAC TGC ACA CTG AAT CCA~~ 1371
~~Pro Ser Glu Asn Leu Ile Ser Tyr Phe Asn Asn Cys Thr Val Asn Pro~~
~~400 405 410~~

~~AAA GAA ACT ATA CTG AAA AGA CTG AAG GAT ATA CGA TAC ATC TTT AAA~~ 1419
~~Lys Glu Ser Ile Leu Lys Arg Val Lys Asp Ile Gly Tyr Ile Phe Lys~~
~~415 420 425~~

~~GAG AAA TTT GCT AAA GCT GTG CGA CAG GGT TGT CTC GAA ATT CGA TCA~~ 1467
~~Glu Lys Phe Ala Lys Ala Val Gly Gln Gly Cys Val Glu Ile Gly Ser~~
~~430 435 440~~

~~CAG CGA TAC AAA CTT GGA GTT CGC TTG TAT TAC CGA GTA ATG GAA TCC~~ 1515
~~Gln Arg Tyr Lys Leu Gly Val Arg Leu Tyr Tyr Arg Val Met Glu Ser~~
~~445 450 455~~

~~ATG CTT AAA TCA GAA GAA GAA CGA TTA TCC ATT CAA AAT TTT AGC AAA~~ 1563
~~Met Leu Lys Ser Glu Glu Glu Arg Leu Ser Ile Gln Asn Phe Ser Lys~~
~~460 465 470 475~~

~~CTT CTG AAT GAC AAC ATT TTT CAT ATC TCT TTA TTG GCG TGC GCT CTT~~ 1611
~~Leu Leu Asn Asp Asn Ile Phe His Met Ser Leu Leu Ala Cys Ala Leu~~
~~480 485 490~~

~~GAG GTT GTA ATG GCC ACA TAT AGC AGA ACT ACA TCT CAG AAT CTT GAT~~ 1659
~~Glu Val Val Met Ala Thr Tyr Ser Arg Ser Thr Ser Gln Asn Leu Asp~~
~~495 500 505~~

~~TCT CGA ACA GAT TTG TCT TTC CCA TGG ATT CTG AAT GTC CTT AAT TTA~~ 1707
~~Ser Gly Thr Asp Leu Ser Phe Pro Trp Ile Leu Asn Val Leu Asn Leu~~
~~510 515 520~~

~~AAA GCC TTT GAT TTT TAC AAA CTG ATC GAA AGT TTT ATC AAA GCA GAA~~ 1755
~~Lys Ala Phe Asp Phe Tyr Lys Val Ile Glu Ser Phe Ile Lys Ala Glu~~
~~525 530 535~~

~~GCC AAC TTG ACA AGA GAA ATG ATA AAA CAT TTA GAA CGA TGT GAA CAT~~ 1803
~~Gly Asn Leu Thr Arg Glu Met Ile Lys His Leu Glu Arg Cys Glu His~~
~~540 545 550 555~~

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~~CGA ATC ATG GAA TCC CTT GCA TGG CTC TCA GAT TCA CCT TTA TTT GAT~~ 1851
~~Arg Ile Met Glu Ser Leu Ala Trp Leu Ser Asp Ser Pro Leu Phe Asp~~
 560 565 570

~~CTT ATT AAA CAA TCA AAG GAC CGA GAA GGA CCA ACT GAT CAC CTT GAA~~ 1899
~~Leu Ile Lys Gln Ser Lys Asp Arg Glu Gly Pro Thr Asp His Leu Glu~~
 575 580 585

~~TCT GCT TGT CCT CTT AAT CTT CCT CTC CAG AAT AAT CAC ACT GCA GCA~~ 1947
~~Ser Ala Cys Pro Leu Asn Leu Pro Leu Gln Asn Asn His Thr Ala Ala~~
 590 595 600

~~GAT ATG TAT CTT TCT CCT GTA ACA TCT CCA AAG AAA AAA GGT TCA ACT~~ 1995
~~Asp Met Tyr Leu Ser Pro Val Arg Ser Pro Lys Lys Lys Gly Ser Thr~~
 605 610 615

~~ACC CGT GTA AAT TCT ACT GCA AAT GCA GAG ACA CAA GCA ACC TCA GCC~~ 2043
~~Thr Arg Val Asn Ser Thr Ala Asn Ala Glu Thr Gln Ala Thr Ser Ala~~
 620 625 630 635

~~TTC CAG ACC CAG AAG CCA TTG AAA TCT ACC TCT CTT TCA CTG TTT TAT~~ 2091
~~Phe Gln Thr Gln Lys Pro Leu Lys Ser Thr Ser Leu Ser Leu Phe Tyr~~
 640 645 650

~~AAA AAA CTG TAT CCG CTA GCC TAT CTC CCG CTA AAT ACA CTT TGT GAA~~ 2139
~~Lys Lys Val Tyr Arg Leu Ala Tyr Leu Arg Leu Asn Thr Leu Cys Glu~~
 655 660 665

~~CCC CTT CTG TCT GAG CAC CCA GAA TTA GAA CAT ATC ATC TGG ACC CTT~~ 2187
~~Arg Leu Leu Ser Glu His Pro Glu Leu Glu His Ile Ile Trp Thr Leu~~
 670 675 680

~~TTC CAG CAC ACC CTG CAG AAT GAG TAT GAA CTC ATG ACA GAC AGG CAT~~ 2235
~~Phe Gln His Thr Leu Gln Asn Glu Tyr Glu Leu Met Arg Asp Arg His~~
 685 690 695

~~TTC GAC CAA ATT ATG ATG TGT TCC ATG TAT GGC ATA TGC AAA CTG AAG~~ 2283
~~Leu Asp Gln Ile Met Met Cys Ser Met Tyr Gly Ile Cys Lys Val Lys~~
 700 705 710 715

~~AAT ATA GAC CTT AAA TTC AAA ATC ATT GTA ACA GCA TAC AAG GAT CTT~~ 2331
~~Asn Ile Asp Leu Lys Phe Lys Ile Ile Val Thr Ala Tyr Lys Asp Leu~~
 720 725 730

~~CCT CAT GCT GTT CAG GAG ACA TTC AAA CCT CTT TTC ATC AAA GAA GAG~~ 2379
~~Pro His Ala Val Gln Glu Thr Phe Lys Arg Val Leu Ile Lys Glu Glu~~
 735 740 745

~~GAG TAT CAT TCT ATT ATA GTA TTC TAT AAC TCG CTC TTC ATG CAG AGA~~ 2427
~~Glu Tyr Asp Ser Ile Ile Val Phe Tyr Asn Ser Val Phe Met Gln Arg~~
 750 755 760

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~~CTG AAA ACA AAT ATT TTG CAG TAT GCT TCC ACC AGC CCC CCT ACC TTG~~ 2475
~~Leu Lys Thr Asn Ile Leu Gln Tyr Ala Ser Thr Arg Pro Pro Thr Leu~~
 765 770 775

~~TCA CCA ATA CCT CAC ATT CCT CGA AGC CCT TAC AAG TTT CCT AGT TCA~~ 2523
~~Ser Pro Ile Pro His Ile Pro Arg Ser Pro Tyr Lys Phe Pro Ser Ser~~
 780 785 790 795

~~CCC TTA CGG ATT CCT GGA GGG AAC ATC TAT ATT TCA CCC CTG AAG AGT~~ 2571
~~Pro Leu Arg Ile Pro Gly Gly Asn Ile Tyr Ile Ser Pro Leu Lys Ser~~
 800 805 810

~~CCA TAT AAA ATT TCA GAA GGT CTG CCA ACA CCA ACA AAA ATG ACT CCA~~ 2619
~~Pro Tyr Lys Ile Ser Glu Gly Leu Pro Thr Pro Thr Lys Met Thr Pro~~
 815 820 825

~~AGA TCA AGA ATC TTA GTA TCA ATT GGT GAA TCA TTC GCG ACT TCT GAG~~ 2667
~~Arg Ser Arg Ile Leu Val Ser Ile Gly Glu Ser Phe Gly Thr Ser Glu~~
 830 835 840

~~AAG TTC CAG AAA ATA AAT CAG ATG GTA TGT AAC AGC CAC CGT GTG CTC~~ 2715
~~Lys Phe Gln Lys Ile Asn Gln Met Val Cys Asn Ser Asp Arg Val Leu~~
 845 850 855

~~AAA AGA AGT CCT GAA GGA AGC AAC CCT CCT AAA CCA CTG AAA AAA CTA~~ 2763
~~Lys Arg Ser Ala Glu Gly Ser Asn Pro Pro Lys Pro Leu Lys Lys Leu~~
 860 865 870 875

~~CGC TTT GAT ATT GAA GGA TCA GAT GAA GCA GAT GCA AGT AAA CAT CTC~~ 2811
~~Arg Phe Asp Ile Glu Gly Ser Asp Glu Ala Asp Gly Ser Lys His Leu~~
 880 885 890

~~CCA GGA GAG TCC AAA TTT CAG CAG AAA CTG GCA GAA ATG ACT TCT ACT~~ 2859
~~Pro Gly Glu Ser Lys Phe Gln Gln Lys Leu Ala Glu Met Thr Ser Thr~~
 895 900 905

~~CGA ACA CGA ATG CAA AAG CAG AAA ATG AAT GAT AGC ATG CAT ACC TCA~~ 2907
~~Arg Thr Arg Met Gln Lys Gln Lys Met Asn Asp Ser Met Asp Thr Ser~~
 910 915 920

~~AAC AAG GAA GAG AAA TGAGGATCTC AGGACCTTGG TGGACACTGT GTACACCTCT~~ 2962
~~Asn Lys Glu Glu Lys~~
 925

~~GGATTCATTG TCTCTCACAG ATGTGACTGT AT~~ 2994

41. (Original) A method of therapeutically treating inactive, mutative or absent cancer suppressing genes comprising:

treating said inactive, mutative or absent cancer suppressing genes with at least a portion of intact cancer suppressing genes.

42. (Original) A method of claim 41, wherein said cancer suppressing genes are each a substance selected from the groups consisting of RB genes, breast cancer suppressing genes, Wilm's tumor suppressing genes, Beckwith-Wiedemann syndrome suppressing genes, bladder transitional cell carcinoma suppressing genes, neuroblastoma suppressing genes, small cell lung carcinoma suppressing genes, renal cell carcinoma suppressing genes, acoustic neuroma suppressing genes, colorectal carcinoma suppressing genes, and mixtures thereof.

43. (Original) A method of claim 41, wherein said treating includes:
treating said inactive, mutative or absent cancer suppressing gene with a substance selected from the group consisting of an RB gene, a portion of said gene, or a mixture thereof.

44. (Original) A method of claim 43, wherein said portion is selected from the group consisting of RB cDNA, RB cDNA fragment, homologues thereof and mixtures thereof.

45. (Original) The method of claim 41, wherein the intact cancer suppressing gene, or portion thereof, is delivered to the site of a tumor by means of a retrovirus.

46. (Original) A method of claim 41, wherein the intact cancer suppressing gene, or a portion thereof, is delivered to the site of a tumor by a liposome.

47. (Original) A method of claim 41, wherein the location of said cancer suppressing gene is determined by utilizing a genetic marker.